

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION**

S.M.R INNOVATIONS LTD and
Y.M.R TECH LTD,

Plaintiffs,

v.

APPLE INC.,

Defendant.

Civil Action No. 6:23-cv-00479-ADA

JURY TRIAL DEMANDED

**DECLARATION OF DR. NATHANIEL POLISH IN SUPPORT OF
DEFENDANT APPLE INC.'S OPENING MARKMAN BRIEF**

I, Dr. Nathaniel Polish, hereby declare as follows:

1. I am over 18 years of age and competent to make this declaration. If called to testify as a witness in this matter, I could and would testify truthfully to each of the matters set forth below.
2. My name is Nathaniel Polish. I currently am the President at Daedalus Technology Group in New York, NY, a computer consulting firm that I co-founded in 1980.
3. I have been retained to serve as an independent technical expert in this matter by Defendant Apple Inc.
4. I am being compensated for my work on this case at my standard consulting rate of \$750 per hour. I am also being reimbursed for any out-of-pocket expenses I incur in relation to my work. None of my compensation depends on the outcome of this litigation or on the nature of any particular opinions I provide. I do not have any other interests in this case or in any of the parties of which I am aware.
5. I have been asked by counsel for Apple to provide my analysis and opinions with respect to several technical questions and issues relating to how a person of ordinary skill in the relevant field would understand certain words or phrases that appear in the claims of U.S. Patent Nos. 7,969,990 (“the ’990 Patent”), 8,711,866 (“the ’866 Patent”), 9,699,223 (“the ’223 Patent”), and 10,547,648 (“the ’648 Patent”) (collectively, “the SMR Patents”).
6. I have reviewed the SMR Patents as well as their prosecution histories. I have also reviewed SMR’s and Apple’s identifications of proposed constructions and SMR’s disclosed extrinsic evidence. In reaching my opinions, I relied on these materials, along with my many years of knowledge and experience in the field of computer science and wireless communication, outlined below.

Qualifications

7. My professional and academic career has spanned 40 years. As set forth in my curriculum vitae, a copy of which is submitted as Exhibit 1, during these years I have gained extensive experience founding start-up companies and as a consultant in the fields of computer science, wireless communication systems, video distribution systems, and natural language interfaces to databases, among others.
8. I was awarded a Ph.D. degree in Computer Science in May 1993 from Columbia University. I received a Masters of Science and a Masters of Philosophy in Computer Science from Columbia University in 1987 and 1989, respectively. I also received a Bachelor of Arts in Physics in May 1984 from Columbia College.
9. I have extensive experience using a wide variety of network protocols to manage the transfer of data including streaming media across networks. For example, in the 1990s, I developed a system for serving video and audio streams over computer networks. That work was covered in a patent that issued in 1999 and for which I am a named inventor.
10. Additional details of my work experience, awards and honors, patents I've been awarded in the field of wireless technology and video distribution, and publications that may be relevant to the opinions I am expressing are set forth in my C.V. attached to the end of my declaration.

Issues Considered

11. I have been informed that, in general, the terms of a patent claim are given the meaning they would have had to a person of ordinary skill in the art at the time the invention was made, in view of the intrinsic evidence, including a patent's claims, specification, and prosecution history. I further understand that a patent owner can "act as his own

lexicographer,” which I understand to mean that a patent can define a term to have a meaning other than the one that a person of skill in the field would normally give it. I further understand that a patent owner can coin his own phrases or terms—that is, to use phrases or words that are not typically used in the relevant field—and that the meaning of those phrases or terms would then be the one given to them by the intrinsic evidence, including the claims, specification, and file history. I have been informed that, in either case, such a definition may be express or by implication.

12. I was asked to provide my technical opinions on the following issues:

- a. Claims 1-3, 9, and 24 of the '990 Patent and claims 22-24 of the '866 Patent refer to a “media transformer.” Did the term “media transformer” connote a structure or class of structures to a person of skill in the art as of 2002, taking into account the knowledge of a person of skill and the statements in the claims and specification regarding the function that the “transformer” was to perform?
- b. Claims 1-3, 9, and 24 of the '990 Patent and claims 22-24 of the '866 Patent refer to an “announcer device.” Was the term “announcer device” a term of art or otherwise a term that those of skill in the field used as of 2002?
- c. During prosecution of the SMR Patents, the Examiner considered two prior art references called Fano and Ortiz. What do Fano and Ortiz disclose about the transmission of acknowledgements or control information, and do either of these references disclose or suggest a new or unique type of acknowledgement protocol from the perspective of a person of skill in the art as of 2002?

d. Claim 7 of the '223 Patent includes the phrase “transmitting said media content to a plurality of copies.” Would the phrase “transmitting said media content to a plurality of copies” have conveyed, with reasonable certainty, any particular meaning to a person of ordinary skill in the art as of 2002?

13. I hold all of my opinions to a reasonable degree of certainty based on my background, training, experience, general knowledge of the literature regarding computer science, computer engineering, and wireless communications, and my review of materials pertinent to this case. I reserve the right to supplement or amend my opinions as permitted by the Court.

Opinions Presented

Level of Ordinary Skill in the Art

14. I have been informed that a person of ordinary skill in the art (“POSITA”) is a hypothetical person who is presumed to have known all of the relevant prior art as of the priority date. I have been informed that factors that may be considered in determining the level of ordinary skill in the art may include: (a) the educational level of the inventor; (b) the type of problems encountered in the art; (c) prior art solutions to those problems; (d) the rapidity with which innovations are made; (e) the sophistication of the technology; and (f) the educational level of active workers in the field. I have been asked to provide my opinion as to the qualifications of the person of ordinary skill in the art to which the SMR’s Patent pertain.

15. In my opinion, a POSITA in the field relevant to the SMR Patents would have had at least master’s degree in computer engineering, electrical engineering, or a related field, and at

least some experience with wireless communications. Further, additional education or experience might substitute for the above requirements.

16. I met the criteria described above as of 2002, and therefore consider myself a person of at least ordinary skill with respect to the SMR Patents.

“Media Transformer”

17. In my opinion, and based on my four decades’ worth of experience in the field, “media transformer” is not, and was not in 2002, a term of art in the fields of computer science or engineering, communications, or media processing. This term would therefore not have connoted any structure or class of structures to a person of skill in the art in 2002.

18. I personally have not encountered the term “media transformer” in my work on computer systems that transmitted, received, or processed media streams. I cannot recall any of my coworkers or collaborators with whom I have interacted in my professional career ever using this term.

19. As part of my efforts to keep current on the state of research and technology within the computer science and engineering fields, I stay up to date on publications including certain of those found on the Institute of Electrical and Electronics Engineers (IEEE) database and the Association for Computing Machinery (ACM) digital library. I have not encountered the term “media transformer,” to the best of my knowledge, in any of the technical articles, conference presentations, or textbooks that I have reviewed or consulted as part of my technical work.

20. To supplement my own knowledge, experience, and recollection. I also searched for the term “media transformer” in the technical literature. I first searched the IEEE database. The IEEE is the world’s largest organization of technical professionals, and its database

publishes thousands of papers relevant to computer engineering, electrical engineering, and wireless communication systems. Searching for the phrase “media transformer” through the end of 2002 (that is, all publications up to December 31, 2002), there were four search results. I reviewed each of those search results and none of them described the type of media transformation discussed in the SMR Patents. I provided a screenshot of that search, below.

21. To be clear the four papers found include two that are about electrical transforms, one that involves computer networking, and one that involves user interfaces. I have reviewed these four results and none of these are related to transforming media, such as audio, video, or any other types of media described in the SMR Patents.

Showing 1-4 of 4 results for ("Full Text & Metadata": "media transformer") ×
 Filters Applied: 1884 - 2002 ×

☐ Conferences (2) ☐ Journals (1) ☐ Magazines (1)

Show
☒ All Results
☐ Open Access Only

Year ▼
Author ▼
Affiliation ▼
Publication Title ▼
Publisher ▼
Conference Location ▼

☐ Select All on Page Sort By: Relevance ▼

☐ **A technique of homogenization applied to the modelling of transformers**
 A. De Rochebrune; J.M. Dedulle; J.C. Sabonnadiere
 IEEE Transactions on Magnetics
 Year: 1990 | Volume: 26, Issue: 2 | Journal Article | Publisher: IEEE
 Cited by: Papers (18)
 Abstract PDF CC

☐ **A comparison of the SAE linear token passing bus and the fiber distributed data interface protocols**
 K.A. Schur
 AIAA/IEEE Digital Avionics Systems Conference. 13th DASC
 Year: 1994 | Conference Paper | Publisher: IEEE
 Abstract PDF CC

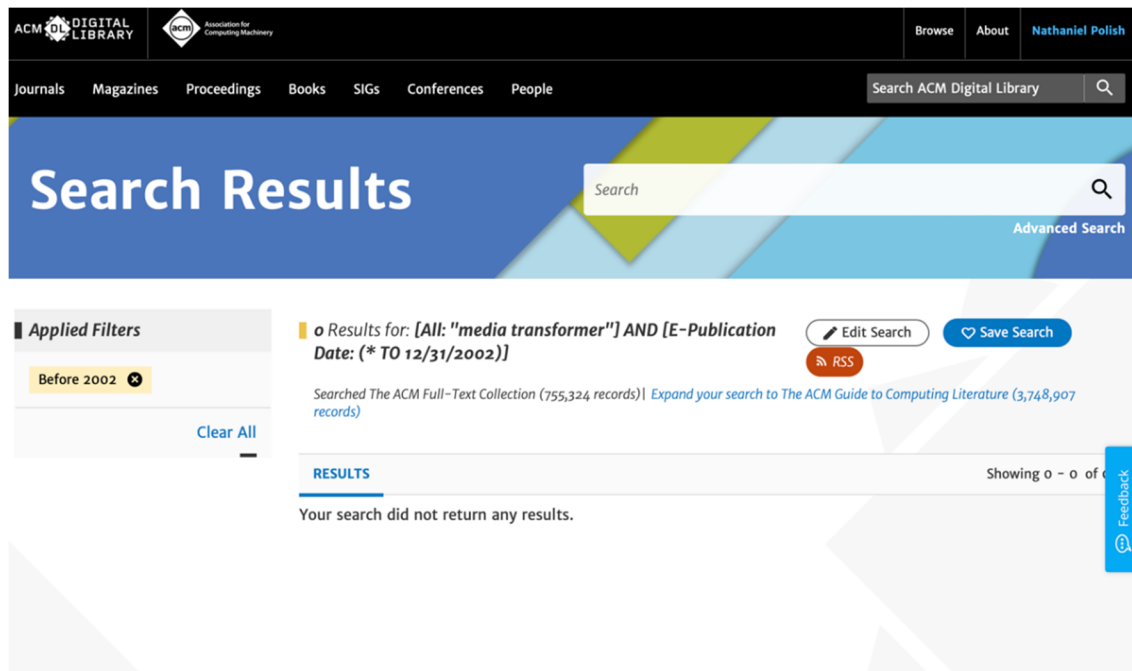
☐ **An advanced overview of the XIS architecture**
 M.-Y. Lai
 Systems Integration '90. Proceedings of the First International Conference on Systems Integration
 Year: 1990 | Conference Paper | Publisher: IEEE
 Cited by: Patents (1)
 Abstract PDF CC

☐ **Electrical power engineering handbook [Book Review]**
 IEEE Power Engineering Review
 Year: 2001 | Volume: 21, Issue: 1 | Magazine Article | Publisher: IEEE
 HTML PDF CC

The IEEE Open-Source Computer Society first Journal in
 Now accepted indexing by Clarivate
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IEEE
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 and N
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22. The second search I ran was in the archives of the ACM digital library. This is another database with which a POSITA would have been familiar and to which a POSITA would have looked for authoritative scientific literature in the computer science and computer engineering fields. I again searched for the phrase “media transformer” through the end of 2002, and there were zero search results. I provided a screenshot of that search below.



23. The results of these two searches reinforced my understanding that “media transformer” was not—and still is not—a term of art in any field relevant to the SMR Patents and would not have been understood by a person of skill in the art as referring to any structure or class of structures. Rather, at best, a person of skill would have understood this phrase solely as a statement of a desired function (transforming media) but not as a representation of any particular structure or type of structure that could perform that function.

24. As of 2002, I was aware of some early dictation systems that converted speech to text, such as IBM ViaVoice and DragonDictate. Engineers in the field would refer to those

systems as “dictation systems” or “speech-to-text” systems. I have never in my four decades of experience heard a speech-to-text system referred to as a “media transformer.”

25. Dictation systems that were available as of 2002 (and today) were specialized to the particular function of producing a text output that represented an estimate of the words contained in some audio source. These systems were not capable of any other “transformation” between different types of media.

26. As of 2002, I was also familiar with “codecs,” which encode and decode audio and video files. Different codecs could use different encoding schemes, which varied across parameters such as quality, bitrate, and sensitivity to errors. I was aware of software and hardware that was designed to convert an audio file or a video file from one encoding to another. This process was known in the field as “transcoding” and the software or hardware that performed it was referred to as a “transcoder.”

27. Transcoding and transcoders involved transformations from one audio encoding to another, or one video encoding to another. Known transcoders that I was aware of in 2002 did not “transform” media between audio and video, audio and text, or the like. Further, from 2002 to present day, I have never heard anyone refer to “transcoding” as “media transforming.”

“Announcer Device”

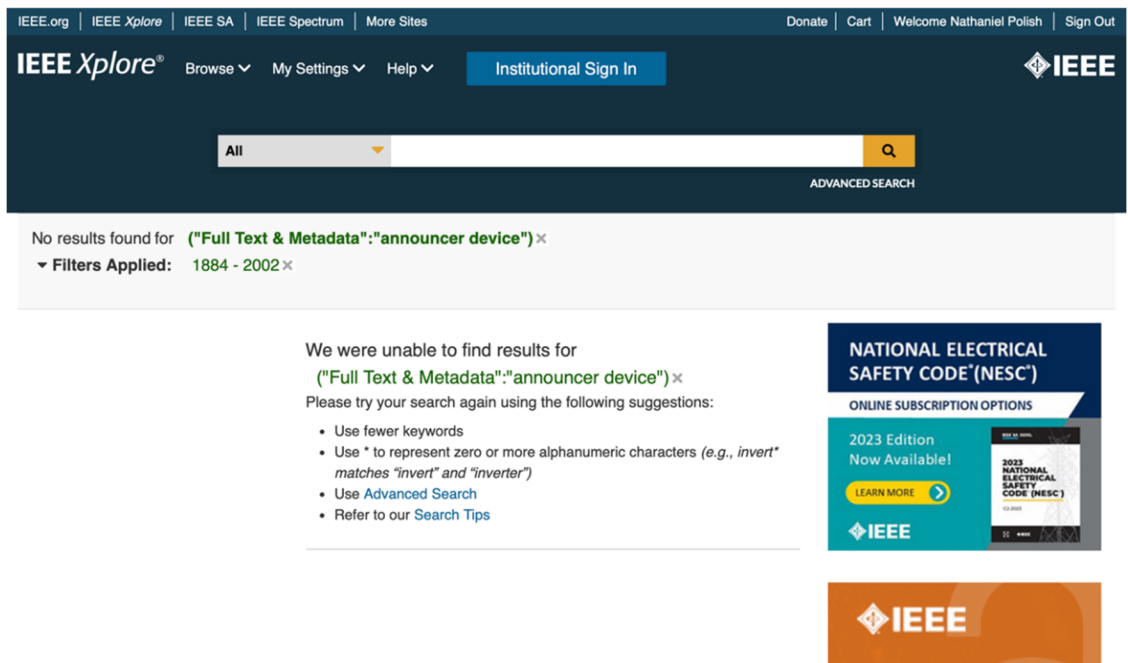
28. In my opinion, and based on my four decades’ worth of experience in the field, “announcer device” is not, and was not in 2002, a term of art in, or a phrase otherwise used in, the fields of computer science or engineering, communications, or media processing. This term would not have had a well-understood meaning to a person of skill

in the field, and a POSITA would not have understood the term “announcer device” to refer to any particular hardware or software.

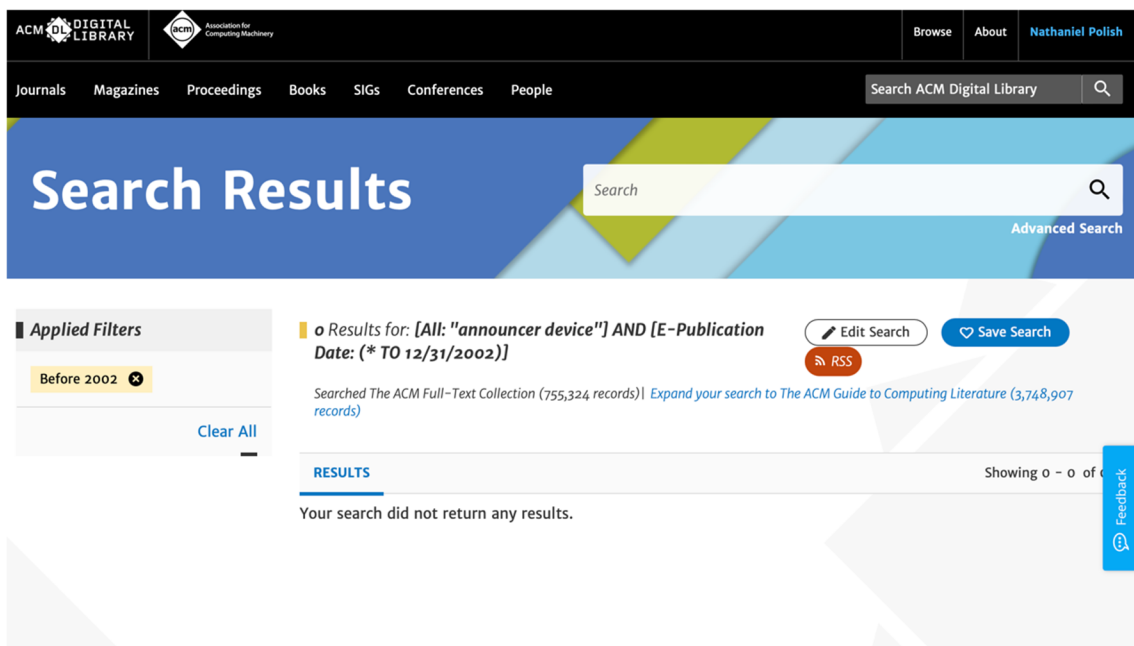
29. In my work on wireless communication systems, I have not encountered the term “announcer device.” I cannot recall any of my coworkers or collaborators with whom I have interacted in my professional career ever using this term.

30. As part of my efforts to keep current on the state of research and technology within the computer science and engineering fields, I stay up to date on publications including certain of those found on the IEEE database and the ACM digital library. I have not encountered the term “announcer device,” to the best of my knowledge, in any of the technical articles, conference presentations, or textbooks that I have reviewed or consulted as part of my technical work.

31. As with the term “media transformer,” I also searched the technical literature for the phrase “announcer device” in order to supplement my own knowledge, experience, and recollection. I first searched for the phrase “announcer device” in the IEEE database (through the end of 2002). There were zero search results. A screenshot from that search is below.



32. I then ran a search in the archives of the Association for Computing Machinery. I searched for the phrase “announcer device” through the end of 2002, and there were zero search results. I have copied a screenshot of that search below.



33. Based on my own understanding and the searches I performed, a POSITA in 2002 hearing the phrase “announcer device” would not have recognized this phrase as one used within the field or understood what meaning it was intended to convey. For instance, a person of skill would not have known what type of device this was, what hardware or software to use, or more generally how to construct such a device.

Acknowledgments Disclosed in Fano and Ortiz

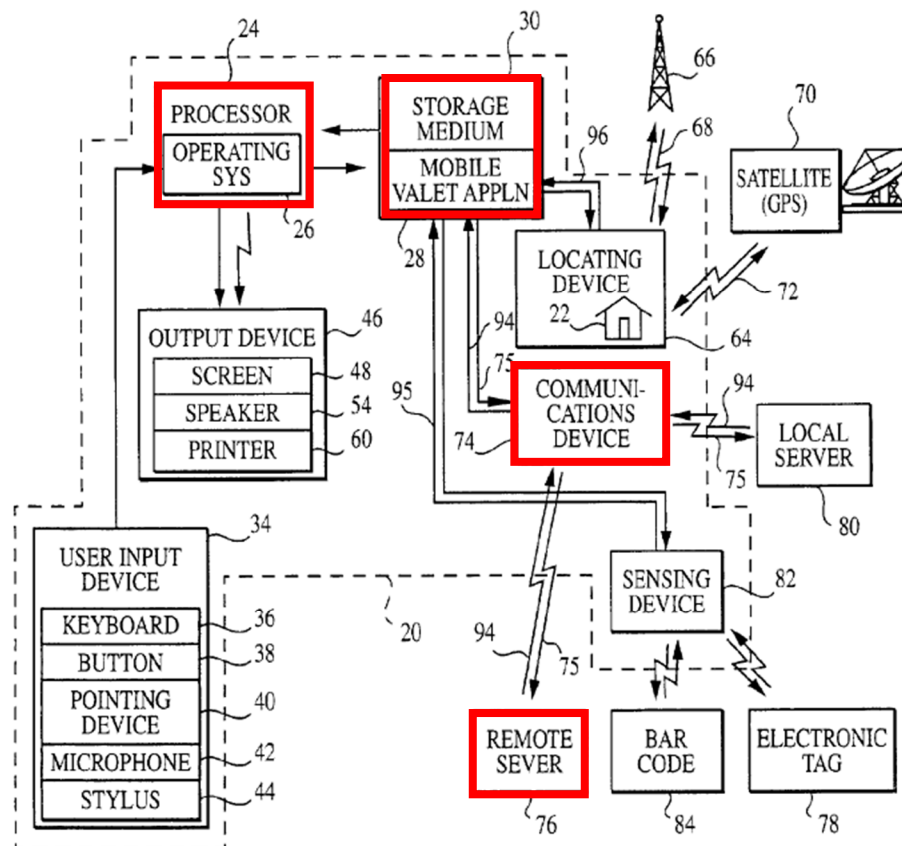
34. I reviewed the prosecution history of the SMR Patents, including the multiple rejections that the Examiner issued before ultimately allowing the claims. In the rejections, the Examiner cited several prior art references, including U.S. Patent Publication Nos. 2002/0058499 (“Ortiz”) and 2002/0133545 (“Fano”).
35. Based on my review of the prosecution history, I understand that some of the Examiner’s rejections related to whether Ortiz and Fano already disclosed the claimed “bidirectional link” for transmitting data. (*See* ’990 Patent, 6/9/09 Rejection; 12/23/09 Rejection; 7/7/10 Rejection.) I understand that the Examiner alleged that these references disclosed the communication of certain media information over a link between two devices, but that the applicant argued that, in one direction of the link, only acknowledgements or other control information was transmitted. (*See* ’990 Patent, 8/26/09 Applicant Remarks; 4/22/10 Applicant Remarks; 12/6/10 Applicant Remarks.)
36. By way of background, audio and video data is generally transmitted over a computer network in “packets.” That was true in the early 2000s and is still true today. Specifically, a sending device will break up an encoded video or audio stream into discrete units of data, called packets. The sending device can send this data, packet by packet, to a receiving device, using different underlying networking protocols and techniques.

37. In some systems, the receiving device receives the packets and takes no further action with respect to the sending device. In other words, the receiving device does not inform the sender that it has received the packets, and the sending device has no knowledge of whether its transmission has been successful. This technique is used in certain basic transmission systems, or in systems where it is impossible or impractical to acknowledge receipt of the transmission (such as large multicast systems, certain types of time-sensitive data, and the like).
38. In other systems, however, the receiving device can send a simple message back to the sending device to confirm that it received the packet. This type of protocol was not limited to the transmission of media data, but was used in a number of general networking protocols. One example of such a protocol was the Transmission Control Protocol, or TCP, which is widely used in communications over computer networks.
39. A POSITA in 2002 would have been familiar with this arrangement, and would generally refer to these confirmation messages as “acknowledgments,” “acks,” or “control” messages. Many wireless communication systems in the early 2000s used acknowledgment messages because they improved the experience from the user’s perspective. In general, for instance, if the receiving device failed to acknowledge a packet, the sending device would know that the receiver was missing a packet of data and needed it to be resent.
40. In media-transmission systems, the acknowledgement process could help ensure that the audio or video stream being transmitted was not missing frames, which could lead to a poor user experience. Similarly, the receiving device could use control messages to

indicate to the sending device if its memory, or buffer was full, or if it was able to accept more data packets.

41. In rejecting the then-pending claims of what would become the '990 Patent, the Examiner pointed out that Ortiz discloses a "bidirectional link." The Examiner concluded that a bidirectional link was present because Ortiz's "WD [wireless device] is allowed to transmit data to the DRD [surrounding equipment] and the DRD is capable of verifying the received data to the WD." (*See* '990 Patent, 7/7/10 Rejection at 10.) In other words, from a technical perspective, the Examiner was describing a situation in which one direction of Ortiz's link transmitted data, and the other direction sent acknowledgement messages to verify that the data packets were received.
42. Based on my review of the reference, the acknowledgements used in Ortiz were the generic acknowledgments that would have been familiar to a POSITA in 2002. Ortiz does not provide any disclosure about a new, unique, or inventive type of acknowledgement message. In fact, it does not discuss the specific mechanism by which the receipt of data would be acknowledged at all. Instead, Ortiz describes a common system in which an "authorization module" would "approve[] receipt of rendering data in accordance with a request initiated by a WD [wireless device] 6." (Ortiz at [0048].) This level of disclosure would make sense to a person of skill because acknowledgement protocols were well known in the communications field, and a person of skill would interpret Ortiz to be referring to any or all of these systems generally, rather than a particular or specific way of implementing acknowledgements.
43. In another Office Action, the Examiner rejected the then-pending claims of what would become the '990 Patent over Fano. (*See* '990 Patent, 6/9/09 Office Action at 2-3.) The

Examiner pointed out that Fano discloses a “bidirectional link” between “the output device 46 . . . and communication device 75,” by way of a series of two-way arrows shown in Fano’s Figure 1. (*Id.* at 3.) I have outlined the modules involved in the pathway described the Examiner in red, below:



44. Based on my review of Fano, that reference describes “mobile valet” devices that can serve as “remote controls to the world.” (Fano at [0040].) Fano teaches being able to use the mobile valet to “redirect the information to a more suitable service channel or display, such a nearby video kiosk.” (*Id.*) Based on my review of the technology disclosed in Fano, the two-way arrows in Figure 1 correspond to video being transmitted in one direction,

and control messages being transmitted in the other. Fano thus appears to simply be referring, in general, to the known acknowledgment-based systems used in wireless communications in the early 2000s. Like Ortiz, Fano does not provide any disclosure about a new, unique, or inventive type of acknowledgement message and does not discuss the specific mechanism by which the receipt of data would be acknowledged at all.

45. Nothing in Fano suggests that it was inventing a new or unique type of acknowledgment message. Again, a person of skill would interpret Ortiz to be referring to any or all of these systems generally, rather than a particular or specific way of implementing acknowledgements.

“Transmitting Said Media To a Plurality of Copies”

46. I have reviewed claim 7 of the '223 Patent, including the phrase “transmitting said media content to a plurality of copies.” Based on my four decades’ worth of experience in the field, this language would not convey to a person of skill in the art, with reasonable certainty, what the claim is supposed to cover.

47. As used in the communications and media processing fields, a “copy” of media content represents a set of data that can be processed, received, or transmitted to various destinations. In contrast, when computer or communication engineers refer to data being sent “to” something, the destination would typically be an address or other identifier representing a device, port, or other communications endpoint to which the data could be routed. A person of skill would not refer to a copy of data as a destination, or a place that something is transmitted “to,” because data is what is being transmitted, not the endpoint of a transmission. In other words, as a technical matter, content is not sent “to” a copy because a copy of data is not a destination that could receive information. Based on my

experience, a POSITA also would not be familiar with this phrasing and would not know what it meant to send data “to a plurality of copies” or how to determine, with any reasonable certainty, whether a system is practicing that limitation.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: September 5, 2024

By:



Dr. Nathaniel Polish